Distributed Energy Road Show

Fort Collins, Colorado
March 27, 2003

Co-hosted by the Center for Networked Distributed Energy at Colorado State University, Western Area Power Administration, and the U.S. Department of Energy's Denver Regional Office

Agenda

8:30	Registration & Coffee
8:15	Welcome
8:30	DE: The National Perspective *Anne-Marie Borbely-Bartis, Battelle at U.S. Department of Energy*
9:00	Combined Heat and Power: Applications and Benefits *Gordon Gerber, Caterpillar*
9:45	Break/Exhibits
10:15	Micro Turbines: Installation & Operation *Kevin Schram, Interstate Power Systems*
11:00	Navigating the Interconnection, Air Quality, and Regulatory Landscape *Randall West, Encorp and Gary Nakarado, National Renewable Energy Laboratory*
12:00	Lunch
1:00	Advanced Reciprocating Engines: Installation & Operation *Gordon Gerber, Caterpillar*
1:45	New Belgium Brewing—Turning Bio Waste into Energy and Process Heat *Jeffrey Lebesch, New Belgium Brewing*
2:30	Structured Discussion and Q&A
3:30	Adjourn

Workshop Notes – Q & A

Combined Heat and Power: Applications and Benefits

Q: Is there one entity that is trying to streamline code and standard development?
A: No

Q: What is Denmark's major fuel source?
A: Natural gas

Q: In hospital and office complexes what is the payback period?
A: 4-5 years, but depends on the utility and how much the system is loaded.

Q: Are there CHP systems in the local area?
A: New Belgium Brewery.

Q: Are you being asked to do more hybrid fuel projects?
A: Not a lot because the costs are high.

Q: Is Europe doing more hybrid fuel projects?
A: Yes, they have more of a policy in place to make the projects more economical.

Q: What is the lifespan of turbines and engines?
A: The technical lifespan is about 40-50 years, but the economical lifespan may be 20-25 years.

Q: There is no emissions credit here in the U.S. Do you want that to change?
A: Yes, we will all benefit.

Q: What are CHP grid benefits of CHP?
A: There is not a clear benefit of CHP on the grid.

Q: Is there a difference between CHP and DG benefits?
A: CHP is typically for baseload and DG is for peaking. There is a technical difference.

Micro Turbines: Installation & Operation

Q: How are the turbines affected by snow?
A: There may be some problems with uncovered units, but most outdoor units have enclosures.

Q: Is the generator spinning at 90,000rpm?
A: Yes

Q: Will you get VAR support from microturbines?
A: Depends on the power electronics.

Q: Is the inverter manufactured in house?
A: Yes

Q: How long does the transfer process take from grid to standalone?
A: About 2 minutes

Q: What do you regulate the gas pressure to?
A: 50psi for 30kW and 75psi for 60kW unit.

Q: Does the 30% efficiency include the gas compressor?
A: Yes

Q: What is the cost/kWh with CHP
A: Variable—if the region has 5cents/kWh electricity and above then it's more cost effective, but also depends on fuel source.

Q: Do landfills offer same applications as wastewater?
A: Yes

Q: Are you selling units for backup generation?
A: No

Q: What are the top customers?
A: Oil fields; CHP at wastewater treatment; schools

Q: What is cost/kW including installation?
A: Variable-$500/kW

Navigating the Interconnection, Air Quality, and Regulatory Landscape

Q: Is the state of Colorado a net exporter or importer of electricity?
A: Exporter. There are some areas that are importers.

Comment: should have the utility identify areas with load constraints and target DG projects there. However, most utilities would not want to admit they have problem in a certain area.

Q: Has air quality permitting been a problem with microturbines?
A: Yes, in WY.

Q: Does air quality need to go to the national level?
A: States must meet EPA guidelines.

Advanced Reciprocating Engines: Installation & Operation

Q: Are the more advanced diesels the same efficiency with lower NOx and particulates?
A: Yes.

Q: Where do you do the emissions compliance testing?
A: The regulators come to the CAT lab.

Q: Why don't manufacturers go to EPA level 5 right now?
A: Cost issue—there are no incentives for reaching that goal early. However, if there were it would change things.

Q: How is HCCI different from diesel?
A: The fuel; HCCI uses natural gas.

Q: Do reciprocating engines use hydrogen?
A: Some work is being done by blending of small amounts of hydrogen with natural gas.

New Belgium Brewing—Turning Bio Waste into Energy and Process Heat

Q: If you let the pressure build up in the digestor bubble will it burst?
A: It hasn't yet—it is constantly going up and down.

Q: Why don't you recycle all the water from effluent?
A: We try to.

Q: Did the recent snowstorm affect the bubble?
A: No—the bubble is at 35-40 C.

Q: What are you doing with the waste sludge?
A: It is being hauled away.

Structured Discussion and Q&A

Q: Where are the problems in the installation of DG?
A: Regulatory; rate structure is a barrier.

Q: Who are the players you've been involved with installing DG?
A: Xcel Energy.

Q: Are there demand pricing methods in place for municipal utilities?
A: We are using TOU rates and thermal storage.

Q: What discussions occur at WAPA on DG networked resources?
A: Hasn't been much talk lately.

Comment: Air quality regulation is the biggest barrier for DG implementation.

Comment: European success was derived from the government educating people about DG/CHP technologies.

Comment: Relationships are key for DG implementation.

Attendance List

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